

Alabama

Forest Health Highlights 2018

The Resource

Greek philosopher Heraclitus in 500 BCE once said that nothing is permanent except change. This underlying law of nature, the ongoing process of change is still evident. Even today, this iconic quote holds true about the history of Alabama's forests; it is a constant everchanging biological ecosystem.

For many areas in Alabama, agricultural practices of the indigenous people included widespread burning to suppress and control natural vegetation, especially undesirable trees in the stand. This practice was mainly implemented to improve hunting by enhancing habitat and forage for game. In return, forest succession was hindered in these burned areas perpetuating the existence of pines. Eventually, European colonists arrived and displaced the native Indians and settled on these preferred lands. This transition of ownership resulted in a change of management regime that ultimately altered the landscape. Unmanaged and abandoned sites were propagated with early successional trees and weedy native vegetation.

Later in the history of Alabama's forests, naturalists recorded forest composition and scenic ecosystems in books and journals. There were several entries in written documents of pine trees throughout the Southeast being as tall as the sky. Mature and untouched hardwoods along stream sides and river edges were so statuesque that they were thought to be remnants of a virgin forest. These descriptive texts from naturalists became one of many incentives for the lumber industry to develop and expand in Alabama.

Abandoned farms from late 1800's to the early 1900's caused by a mass exodus from the South also affected the landscape. Many of these abandoned sites were converted into forests. Native vegetation and non-native invasive plants were planted on some sites for erosion control while other sites were naturally regenerated with early successional trees.

Along with these thriving new forests in Alabama came the related ecological problems. The timber industry in the state was advancing as an important economic entity, but wildfires were becoming more frequent. To protect this growing timber stock, the Alabama Forestry Commission was established in 1923. An inventory to receive knowledge about Alabama forests was first completed in 1924 giving an estimated volume of 22 million acres in the state.

By the mid-20th century, forest industry was significantly expanding in Alabama. To invest in this recurrent market, sustainable timber and forest management were encouraged, placing an emphasis on reforestation. From this one practice alone, more and more forested acres proceeded in the state.

Continuous tree regeneration and other management practices are ensuring perpetual forest stands in Alabama. In fact, the state is gaining timber volume at a higher rate than most other Southern states showing a 30.8% increase between 2001 to 2017. According to Forest Inventory

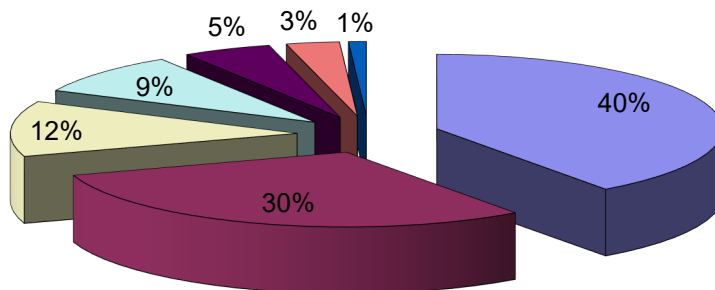
and Analysis data, Alabama has the third most timberland acreage in the 48 contiguous states with approximately 23 million acres, behind Georgia and Oregon.

The timber industry is still one of the main contributing economies in the state. Alabama's Economic Development data revealed that Alabama ranks second in pulp and paper production and ranks sixth in lumber and panel production in the country.

Of the 23 million acres, various forest types thrive in the state creating a diverse and picturesque landscape. The vast amount of these forests is flourishing in loblolly and shortleaf pines. As a prominent tree species for timber production, this forest type shows an increase in the total number of acres from the previous year. From a percentage perspective, however, the distribution of forest types remains constant despite slight changes in the total number of acres.

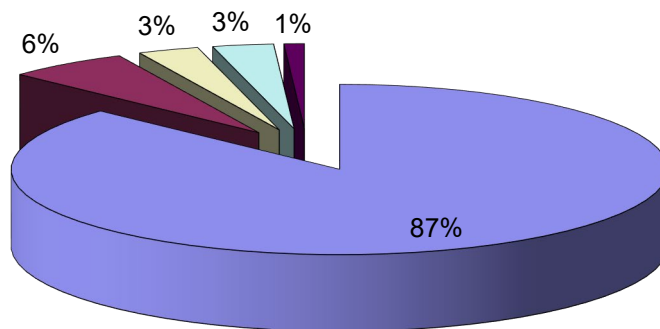
Land ownership of Alabama forests illustrates a significant change from last year. Private non-industrial landowners still own most of the forests in the state, but there is a noticeable decrease. The total number of acres as well as the percentage amount is less from last year. Consequently, forest industry has more property holdings compared to last year. After several consecutive years of divesting property, forest industry shows a significant gain in the total number of ownership acreage.

Alabama Forest Type Distribution



■	Loblolly Pine/Shortleaf Pine	40% (9,246,200 ac)
■	Oak/Hickory	30% (6,859,900 ac)
■	Mixed Hardwood/Pine	12% (2,786,200 ac)
■	Oak/Gum/Cypress	9% (2,192,900 ac)
■	Longleaf Pine/Slash Pine	5% (1,111,900 ac)
■	Elm/Ash/Cottonwood	3% (612,400 ac)
■	Other	1% (285,900 ac)

Alabama Forestland Ownership Distribution



■ Non-industrial Private Landowner 87% (20,056,500 ac)
■ Forest Industry 6% (1,464,100 ac)
■ U. S. Forest Service 3% (650,800 ac)
■ State and Local Government 3% (637,200 ac)
■ Other Federal Land 1% (286,800 ac)

The Influences

Pine Engraver Beetle, *Ips spp.*:

Usually responding to stressed trees first, the pine engraver beetle was virtually unnoticed this year in forest stands. Alabama received a significant amount of rain and warm temperatures throughout 2017 and 2018 that most of the drought-affected trees were recovering. With pines regaining their vigor, fewer and fewer pine engraver beetle infestations were occurring. This year unlike 2017, there were few recorded pine engraver beetle infestations. Of the 299 aerially detected spots this year, only a few were caused by the pine engraver beetle, a significant difference from 2017.

Black Turpentine Beetle, *Dendroctonus terebrans*:

During the early part of 2018, there were reports of beetle infestations in pines, a continuation from the summer of 2017. A favorable climate persisted for most of 2017 resulting in a decline of beetle infestations by early 2018. New infestations in the year were rare. Alabama received a significant amount of rain and warm temperatures throughout the year that most of the drought-affected trees were recovering. After close analysis, most of these reported beetle infestations were caused by the black turpentine beetle. Most likely, this bark beetle attacked the pines after the extended drought of 2016 when the trees were quite stressed. Since an infestation from the black turpentine beetle does not immediately cause mortality, landowners started noticing the

damage months after the drought. Most of the black turpentine beetle infestations existed on the edge of an inactive southern pine beetle spot.

Southern Pine Beetle, *Dendroctonus frontalis*:

Because of the suitable climate of 2017 with adequate rainfall and warm temperatures, southern pine beetle infestations were predicted to decline. Traps were deployed in the usual four counties – Lowndes, Clarke, Barbour, and Tallapoosa. No additional counties were surveyed this year. The results from the pheromone survey indicated an overall decline of the southern pine beetle population in the state. The survey, however, did indicate that certain areas on the National Forests may have a significant number of beetle infestations.

The Alabama Forestry Commission decided to conduct one southern pine beetle aerial survey this year for the entire state. Therefore, the survey was implemented in June, 2018 at the beginning of the summer when bark beetles become most active. The counties that were most affected by bark beetles in 2017 received high priority for monitoring activities. Of the 67 counties in the state, 47 were ultimately surveyed from June 1, 2018 to September 30, 2018. All of the National Forest Ranger Districts were also surveyed. This year, the Alabama Forestry Commission decided to use a different method to survey the National Forests. The two Ranger Districts with the most beetle infestations in 2017 were selected to be surveyed by a contract pilot using a different monitoring technique. The contract pilot used a fixed-wing plane with a camera attached for taking photographs in realtime of beetle infestations. The GIS technology associated with the camera accurately recorded the coordinates of the spots. The photograph of the spot illustrated the exact number of infested pines. By having a photograph of each spot, these pictures were used for data interpretation and archived for future reference.

As predicted, the number of southern pine beetle infestations drastically decreased. There was still a significant number of spots detected on two of the National Forest Ranger Districts – Bankhead National Forest and Talladega National Forest, Oakmulgee Ranger District. In all, Alabama detected 299 beetle spots, infesting 8,013 pines. More than half of these infestations were located on National Forests.

Pine Needle Diseases, *Coleosporium spp.*, *Lophodermium spp.*, *Dothistroma spp.*, and *Lecanosticta spp.*:

From 2016 to 2018, Alabama transitioned from a persistent drought to abundant precipitation. Certain species of trees were quite vulnerable to these extreme climatic conditions. There was one group of pests, leaf fungal diseases that was the most noticeable this year.

After the extended drought of 2016, the following year started with significant rain. In fact, Alabama received a total precipitation amount that was 2 inches greater than normal. This weather trend continued into 2018. Fungal diseases associated with wet conditions started to manifest. Cherry leaf spot, leaf anthracnose, and needle cast were reported throughout Alabama. Needle diseases, however, were the most concerning. Needle cast, generally a weak pathogen was quite virulent this year. Loblolly pine plantations were the most affected by needle cast

diseases. Some infections were so severe, that a few pines succumbed to this pest. There were other needle pathogens that caused havoc to loblolly pines. Pine needle rust was so severe in some stands that many pines appeared to have been scorched by a wildfire. Several pines infected with pine needle rust succumbed to the disease.

Laurel Wilt Disease, Fungus-*Raffaelea lauricola* and Redbay Ambrosia Beetle-*Xyleborus glabratus*:

This year, several southeastern states participated in a forest health project administered by the USDA Forest Service to monitor the spread and impact of laurel wilt disease in sassafras beyond the Gulf-Atlantic Coastal Plain into the upper regions of eastern United States. The participating states were Virginia, North Carolina, Tennessee, South Carolina, Georgia, Alabama, Louisiana, and Arkansas. Several sites containing a stand of sassafras were selected for the project. Across the southeast, a total of 36 sites was selected with 681 tagged sassafras trees. For two sites in each state, redbay ambrosia beetle traps were deployed. Two traps per site were deployed in the sassafras stand for 8 weeks during the summer (August and September). In Alabama, 10 counties, approximately 1,000 acres total were surveyed by ground for laurel wilt disease and for suitable sassafras sites for the project. Brierfield Ironworks Historical Park in Bibb County was one of the sites selected for the deployment of redbay ambrosia beetle traps. On the site in Bibb County, several redbay ambrosia beetles were identified in one of the traps. Later during the summer, stem samples were taken from symptomatic sassafras trees from the site and sent to the Forest Service laboratory for analysis. The results confirmed that laurel wilt disease was present in Bibb County, AL.

Emerald Ash Borer, *Agrilus planipennis*:

USDA Animal and Plant Health Inspection Service (APHIS) hired an independent contractor to deploy emerald ash borer traps in the state. The traps remained at their designated location throughout the summer of 2018. The Alabama Forestry Commission has not received official results from APHIS but was informed that three additional counties were positive for emerald ash borer. Back in February 2017, the Alabama legislature approved of a quarantine for 3 counties - Calhoun, Cherokee, and Cleburne. This quarantine, however, will not be amended by the Alabama Department of Agriculture and Industries until APHIS finalizes the decision on the emerald ash borer deregulation proposal.

Forest Programs

Southern Pine Beetle Prevention Cost-share Program

In February 2017, the 2017-2018 SPB Prevention Cost-share Program was implemented. The proposed funded practices were non-commercial first thinning and understory prescribed burning. Stand assessment and application approval were done in May 2017. Landowners were notified in June 2017 on the status of their application. Because of limited funds allocated to the

program, applications for the understory prescribed burning practice were not approved. There were 21 landowners that applied for the non-commercial first thinning practice with 15 that were approved into the program. The deadline to complete the practice was September 30, 2018. There were 2 landowners that completed the practice, 2 that were later rejected, and 3 that requested an extension.

Because of landowner demand to have another opportunity to apply for the non-commercial first thinning practice, another cost-share program was implemented. The application deadline was March 2018. Landowners were notified in May 2018 on the status of their application. The demand was acknowledged, but the response was not evident. There were 3 landowners that applied to the cost-share program with 2 that were approved. The 3 landowners from the 2017-2018 cost-share program that wanted an extension were later transferred to the 2018-2019 cost-share program.

Gulf Coastal Plain Ecosystem Partnership Cogongrass Project

This year, several partnering agencies and organizations in South Alabama and Northwest Florida began to address the threat of rapidly expanding cogongrass infestations in the area. The partners collaborated to form a Working Group that focused coordinated control and prevention efforts within a targeted landscape, the Cogongrass Partnership Area that consists of approximately 1,000,000 acres. This landscape included ecologically significant lands of the Conecuh National Forest, Geneva State Forest, and Covington Wildlife Management Area in Alabama, and the Blackwater River State Forest, Blackwater River Water Management Area, and Yellow River Water Management Area in Florida. It also included large tracts of industrial forestland. This landscape occurred within the broader region of the Gulf Coastal Plain Ecosystem Partnership (GCPEP), a highly effective and exemplary partnership coordinated by The Longleaf Alliance.

Alabama Forestry Commission employees collaborated with the partners of the Working Group to initiate activities for the Gulf Coastal Plain Ecosystem Partnership Cogongrass Project. With the assistance of the Covington County Soil and Water Conservation District, over 20 cogongrass spots were identified and recorded in the EDDMapS Pro application. The Alabama Forestry Commission purchased supplies that included iPads for data collection, and sprayers and herbicides for treatment application. Small spots on private lands were directly treated by Alabama Forestry Commission personnel.

Environmental and Climatic Events

Wildfires

The number of wildfires significantly decreased since last year. During the 2017 fiscal year, there were 3,371 wildfires encompassing 48,660 acres. Almost half of these fires occurred in October 2017. In this month, there were 1,028 wildfires that burned 11,232 acres of forestland. This year, Alabama received some relief from the extreme fire season. Adequate rainfall started

in 2017 and continued throughout most of 2018. The wet climate was such a contrast from the 2016 drought that almost debilitated Alabama. The warm humid climate influenced wildfire behavior in the state, decreasing the number of occurrences in 2018. In all, there were 967 wildfires that burned 11,312.57 acres.

Hurricanes, Tornadoes, and Storms

The climate during the past year in Alabama was acceptable. Overall, the state received approximately 2 inches of rainfall above average. The temperature throughout the year was somewhat inconsistent. Alabama had an unusual cold winter with snowfall that occurred twice in the southern areas of the state. More specially, Mobile and Baldwin Counties received measurable amounts of snow this past winter. The spring had a very unstable climate. During this season, the temperatures were either warmer than normal or colder than normal. The summer sustained its hot and humid climate while the fall was unusually warm. This unusual weather pattern incited several hurricanes. Unfortunately, the southeastern states received the worst of the hurricane season this year.

There were two recordable storms in Alabama that caused significant damage to structures and forests. One storm was a tornado that occurred this past spring that destroyed properties in North Alabama. The other storm was rather recent, Hurricane Michael that pummeled Southeast Alabama.

On Monday, March 19, 2018 the National Weather Service in Huntsville, AL conducted a briefing to warn citizens of a potential weather disturbance coming from the northwest moving southeast. As the storm system moved from Northeast Mississippi, it entered Alabama with stronger winds and more precipitation. The storm traversed across the northern half of Alabama with damaging winds, large hail, and peripheral tornadoes. By mid-day on March 19th, the storm was pounding on North Alabama causing noticeable damage. According to the Alabama Emergency Management Agency, a powerful weather system produced a broken line of supercell thunderstorms that affected areas north of Interstate 20. This included reports of hail, straight-line winds, flash flooding, and tornadoes. The most intense damage was located north of I-20, and east of I-65. The National Weather Service storm surveys have confirmed 15 tornadoes across the state. Counties with reported damage from tornadoes were Franklin, Cullman, Limestone, Morgan, Marshall, St. Clair, Etowah, Calhoun, and Cleburne.

Scattered forest damage was reported in several northern counties in Alabama. The most significant forest damage, however, occurred in Limestone, Calhoun, and Cleburne Counties. Aerial surveys were conducted along the tornado path to assess and record any substantial amount of injury to forest stands. Not as extreme as previously predicted, there were approximately 1,000 acres of damaged timber from the tornado that traversed across Calhoun and Cleburne Counties. There were scattered fallen and leaning trees from the tornado that passed through Limestone County, but no measurable forest damage. The most concerning amount of timber and property damage occurred in Jacksonville, AL when an EF-3 tornado descended and traversed across the city. Scattered areas of the city were ruined, but Jacksonville State University received the bulk of the destruction. Because the havoc existed in a metropolitan

area, the Alabama Forestry Commission's Urban Forestry Section directed a formal damage assessment in Jacksonville. An Urban Forest Strike Team completed an assessment survey of Jacksonville, AL focusing on properties in and surrounding the university. The latest technology was used that included GIS programs and drone equipment. The location of fallen and injured trees was recorded for future replacement. From drone and GIS technology, an aerial view of damaged property in and around Jacksonville University was illustrated as a mosaic picture. The total amount of damage was 432 trees with an average DBH of 19.6 inches.

On Wednesday, October 10, 2018, Hurricane Michael came from the Gulf of Mexico across the Florida panhandle with tremendous force. The eye of the storm reached land near Mexico Beach, Florida moving northeast bringing strong winds and heavy rain to parts of southeast Alabama. By best estimates, Hurricane Michael's wind speed was 155 mph at landfall, making this storm a category 4, just 2 mph short of a category 5. As the storm traversed across the state, the wind speed was still strong at approximately 115 mph. Precipitation pummeled the surface bringing approximately 6 inches of rain to the most affected areas of Alabama. Hurricane Michael was fierce but moved rather quickly through the southeast simultaneously decreasing in strength. Despite the deceleration of wind speed as it progressed towards the eastern coast, extreme damage occurred in areas that laid in the direct path of the storm. Hurricane Michael was the third strongest storm to hit the continental United States and the strongest one to hit this country in October. The main southeastern states to be significantly impacted by the storm were Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia. In summary, there were 42,357 forested acres in Houston County, Alabama damaged by Hurricane Michael, with 1,011,819 tons of timber destroyed at a value of approximately \$20 million.

References

- The Alabama Climate Report – The University of Alabama in Huntsville
- A History of State Forestry in Alabama – Alabama Department of Conservation Division of Forestry
- Alabama Forest Resource Information – Alabama Forestry Commission, Forest Inventory and Analysis (FIA) Data
- Alabama Forest Resource Information – Alabama Forestry Commission, Forest Economic Development Data
- Alabama Wildfire Information – Alabama Forestry Commission, Fire Operations Section
- Alabama Forest Health Information – Alabama Forestry Commission, Forest Health Section

For more information about Alabama's forest health program, go to the Alabama Forestry Commission's website: <http://www.forestry.alabama.gov>.

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